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Request for Submission of Topics for USPTO Quality Case Studies

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February 12, 2016

The Hon. Michelle K. Lee
Under Secretary of Commerce
Director, U.S. Patent and Trademark Office

Re: Request for Submission of Topics for USPTO Quality Case Studies

Dear Director Lee:

We write to you today in response to the U.S. Patent and Trademark Office's (USPTO) Request for Submission of Topics for USPTO Quality Case Studies, published December 21, 2015.¹ We applaud the USPTO's ongoing efforts to enhance the quality of U.S. patents, particularly those efforts that leverage the agency's ability and expertise in collecting and analyzing quantitative data. Open patent data is a vital innovation asset that facilitates the transfer, management, and dissemination of innovation and currently supports well over 100 startups and patent data companies.² The additional datasets that have been made available during this Administration, particularly under the auspices of the Office of Chief Economist, should only bring more clarity and transparency to the innovation ecosystem. It is in this spirit of harnessing the power of data to improve patent quality that we offer our comments.

As empirical scholars interested in using data to drive policy-making, we commend the USPTO's approach of using "case studies" of the type specified in the RFC—i.e., "reviews of applications" and "examiner work products"—to help illuminate, inform, and hypothesis-test potential best practices in patent quality. However, we would like to draw attention to two, thus far largely overlooked sources of data outside the USPTO's own prosecution records: (1) the prosecution records of foreign patent offices that examine counterparts to applications filed in the U.S. and (2) the outcomes of lawsuits and other proceedings that review the validity of issued U.S. patents.

Below, we propose three case studies that leverage these data sources for your consideration:

¹ 80 Fed. Reg. 79277 (proposed Dec. 21, 2015), available at <https://www.gpo.gov/fdsys/pkg/FR-2015-12-21/pdf/2015-31897.pdf>.

² *The Patent Data 100+*, Colleen V. Chien and Reuben Bauer (forthcoming); working list of companies available at: <http://tinyurl.com/patentdatacos>.

Title:

Case Study of Comparative Patent Examination

Proposal for Study:

The European Patent Office (EPO) is consistently ranked as producing the highest quality patents in the world.³ A comparative study of the EPO's examination practices may illuminate practices that the USPTO can adapt to US settings (or at least experiment with) to improve US patent quality.

Explanation:

While the substantive patent laws of Europe and the US are largely harmonized, the USPTO and EPO use different procedures to examine patents. For example, European examination is bifurcated into search and examination, whereas USPTO examiners integrate search and examination at every step. Examination at the EPO is also "front-loaded," with an estimated 8-12 hours devoted to search at the outset of the review process,⁴ as compared to an estimated average 2 hours at the USPTO, though the amount allocated varies considerably.⁵ Moreover, unlike the EPO, the USPTO allows applicants to accelerate consideration of their patent applications, to "continue" examination after a final rejection, and (for small users) to pay reduced fees. However, the basic task between examiners on both sides of the Atlantic are the same – to evaluate the invention described in the patent and the patent itself, in light of the relevant prior art, for its novelty, nonobviousness, and the other requirements of patentability.

In surveys of patentholders and patent practitioners, the EPO has consistently ranked highest in patent quality, as well as customer service.⁶ The agency's top marks in service, which we understand to indicate customer satisfaction, are particularly interesting because they were earned despite a relatively low allowance rate⁷ and a relatively high rate of withdrawal by the

³ See, e.g. *Quality and Procurement*, IAM Magazine, 2015, available at [http://documents.epo.org/projects/babylon/eponet.nsf/0/4783c6465d9a2b5fc1257e5900242b3f/\\$FILE/IAM72_benchmarking_q_p_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/4783c6465d9a2b5fc1257e5900242b3f/$FILE/IAM72_benchmarking_q_p_en.pdf), tables 6-11 (reporting survey results that show the shared view of attorneys, companies, and patent holders that EPO patents are of the highest quality). *Accord The EPO Tops The Quality Table Once Again, As The USPTO And SIPO Make Forward Strides*, May 29, 2012, available at <http://www.iam-media.com/blog/detail.aspx?g=f7470c76-8fe7-42e3-a4bb-fce2b4fa1a17>.

⁴ Bruno van Pottelsberghe de la Potterie, *The Quality Factor in Patent Systems* (2011) at 1778, 2015 correspondence with the EPO.

⁵ Frakes, Michael and Melissa Wasserman, *Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid Patents?: Evidence from Micro-Level Application Data* (NBER Working Paper No. w20337, 2014), 4, available at <http://ssrn.com/abstract=2472794>

⁶ IAM Magazine 2015, *supra*, tables 12-14.

⁷ See e.g. Colleen V. Chien, *Comparative Patent Quality*, Presentation to Santa Clara University Hogan Lovells Conference November 4, 2015, (slide 19) available at Appendix A and <http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=1900&context=facpubs> Jensen et al., *Disharmony in International Patent Office Decisions*, 15 Federal Circuit Bar Journal 679 (2005); Webster et al., *Characteristics of International Patent Application Outcomes*, 95 Economics Letters 362, 368 (2007); Palangkaraya et al., *Misclassification between Patent Offices: Evidence from a Matched Sample of Patent Applications*, 93.3 Review of Economics and Statistics 1063, 1075 (2011); Webster et al., *Patent Examination Outcomes and the National Treatment Principle*, 45 The RAND Journal of Economics 449, 469 (2014) (finding that local offices tend to favor

applicant.⁸ To further explore what the EPO does to ensure both high patent quality and satisfied stakeholders, the USPTO could consider publishing an RFC or holding a roundtable to better understand why the EPO is perceived to produce high quality patents.

The USPTO could also consider conducting a study of matched samples of international patent applications that were filed with both the USPTO and EPO.⁹ Existing studies of this kind suggest that EPO examination procedures successfully weed out many low quality applications that, in US, are granted and are later enforced at great cost to those forced to challenge them. One of us recently found, for example that, of 169 US patents challenged in inter partes review that had foreign counterpart applications filed with the EPO, more than half were issued only in the US, with a large proportion of the non-issued EPO applications withdrawn.¹⁰

Title:

Case Study of the Examiner Citation of Non-Patent Literature (NPL) and Foreign Prior Art (FPA)

Proposal for Study:

A high quality patent must be novel and nonobvious in light of all applicable prior art. However, not all relevant prior is readily accessible to applicants and examiners. Non-patent literature (NPL) and foreign prior art (FPA) can be unusually difficult to locate and consider. A study of the relative rates of NPL citation across USPTO art units, as well as in comparison to that of parallel EPO examinations can help the USPTO determine whether, and how, to support examiners' consideration of NPL and FPA.

Explanation:

Several studies related to patent quality support the USPTO's focus on NPL as a significant quality lever, through for example, its February 20, 2014 executive action on crowd-sourcing prior art and the automated pre-examination search pilot, efforts that we applaud. For example, an analysis that one of us did of 311 patents that were the subject of inter partes review decisions, found that NPL was cited by the examiner during the prosecution of around 16% of the 311 cases, but the PTAB cited NPL around 40% of the time.¹¹ Moreover, it appears that across all types of patents, EPO examiners are more likely to include NPL in their search reports than are US examiners to cite NPL in their examination.¹² In addition, multiple studies of litigated patents

local applicants), Graham and Harhoff, *Separating Patent Wheat from Chaff: Would the U.S. Benefit from Adopting a Patent Post-Grant Review?*, 43 Research Policy 1649, 1659 (2009). In other work by the same authors, they found that EPO equivalents of US litigated patent applications were more likely to be awarded EPO patent protection than were equivalents of unlitigated patents (Stuart J.H. Graham and Dietmar Harhoff, *Can Post-Grant Reviews Improve Patent System Design? A Twin Study of US and European Patents* (Center for Economic Policy Research Discussion Paper No. 5680, 2006))

⁸ Colleen V. Chien 2015, *supra*, at slide 20-21.

⁹ A sizeable literature, including papers by one of us, explains various approaches to conducting such studies. *See, e.g.* cites *supra*. We are happy to share additional details upon request.

¹⁰ Colleen V. Chien 2015, *supra*, at slide 21.

¹¹ Colleen V. Chien, unpublished analysis, available on request.

¹² Colleen V. Chien 2015, *supra*, at slide 23.

have found a significant, positive correlation between validity and the citation of FPA during examination.¹³

The USPTO could study the use of NPL and FPA by US examiners and also compare US citation rates with those of the EPO examiners. The USPTO might then decide, for example, to take corrective action in art units that exhibit the greatest disparities. In addition, looking at citation trends within USPTO prosecution over time and across art units may reveal how efforts like the Biotechnology Partnership and the executive action on crowdsourcing, as well as the development of new tools like the Automated Search contemplated by the Quality Initiative, and Google Prior Art Finder have led to greater use and awareness of NPL and FPA sources.

Title:

Case Study of Patents Adjudicated by Courts and Other Tribunals

Proposal for Study:

Courts and other adjudicative tribunals, like the PTAB, regularly evaluate the validity of patents issued by the USPTO. Whether a patent can survive a post-issuance validity challenge is an important quality check, thus, data on the outcomes of such challenges can inform efforts to improve quality. For example, a study that compares the characteristics of patents that have survived a post-grant validity challenge with the characteristics of patents invalidated post-issuance can help the USPTO identify ways to improve the examination process.

Explanation:

Opinions issued by adjudicative bodies—including federal courts, the International Trade Commission, and the Patent Trial and Appeal Board—that review the validity of issued patents are a largely untapped source of quality-related data. While several scholars have studied the characteristics of adjudicated patents,¹⁴ these studies have generally been modest in scale, due in large measure to the effort historically required to identify litigated patents and access their prosecution histories. Fortunately, data on patent litigation and prosecution – in part thanks to the USPTO’s own open data initiatives – is more accessible today than it ever has been before. Companies like Lex Machina now collect patent litigation documents that were previously only available through PACER and make them available in a single, searchable database, which the GAO has already utilized to study patent quality.¹⁵ The USPTO recent release of a large amount

¹³ See Ronald J. Mann & Marian Underweiser, *A New Look at Patent Quality: Relating Patent Prosecution to Validity*, 9 J. EMPIRICAL L. STUDIES. 1, 21 (2012) (“[T]he variable for foreign references . . . is positive and significantly different from zero”); Kentaro Nagata, et al., *Empirical Analysis of Japan Patent Quality*, Proc. 18th International Conference on Management of Technology at *13 (2008) (“[T]he number of foreign patent references which a patent examiner cited and the number of foreign patent references specifically added by a patent examiner are statistically significant predictors of patent legal quality.”).

¹⁴ See, e.g., Josh Lerner, et al., *Financial Patent Quality: Finance Patents After State Street*, Harvard Business School Working Paper 16-068 (2015), available at http://www.hbs.edu/faculty/Publication%20Files/16-068_702dabb8-70c5-4917-a257-75dc8b0c4f6b.pdf; Ronald J. Mann & Marian Underweiser, *A New Look at Patent Quality: Relating Patent Prosecution to Validity*, 9 J. EMPIRICAL L. STUDIES. 1 (2012); Kentaro Nagata, et al., *Empirical Analysis of Japan Patent Quality*, Proc. 18th International Conference on Management of Technology (2008).

¹⁵ USGAO, Intellectual Property: Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality, GAO 13-465, pub’d Aug. 22, 2013, available at http://www.uspto.gov/sites/default/files/aia_implementation/GAO-12-465_Final_Report_on_Patent_Litigation.pdf.

of application-level data on patent prosecution that was previously only available through PAIR¹⁶ has already started to stimulate research and study.¹⁷ In short, the USPTO's ability to access and analyze this kind of information has never been greater.

By cross referencing data on patent validity determination with data on patents' characteristics and prosecution histories, the USPTO can determine whether any patent characteristics correlate strongly with validity and, if so, which ones.¹⁸ For example, this analysis might reveal that the citation of NPL or FPA during prosecution, as described above, is strongly and positively correlated with validity. If so, the USPTO might decide in the future to stress to its examiners the importance of looking for prior art outside databases of U.S. patents or to implement additional training for examiners in this regard.

While in an ideal world the USPTO might conduct this kind of study using with a complete sample of all patents adjudicated by any tribunal, the USPTO could focus first on "institution decisions" and "final written decisions" issued by the Patent Trial and Appeal Board in inter partes reviews (IPRs).¹⁹ In the last three years, thousands of invalid claims in hundreds of issued patents have been eliminated in IPRs and many more have been deemed likely invalid in reviews that were settled after an institution decision.²⁰ As the USPTO has already recognized, these decisions offer useful feedback for (at least) the examiner of record of invalidated patents.²¹ Moreover, the USPTO has already collected a good deal of data on PTAB outcomes and, thus, likely need not rely on databases created by third parties (or otherwise reinvent the wheel) to identify confirmed and invalidated patents.²² Finally, compared to litigation outcomes (as well as reexaminations), IPR decisions are made (and become final) relatively quickly²³ and likely involve newer patents – facts that help mitigate the confounding influence of the fact that legal rules and USPTO policies have shifted over time.

* * *

We are delighted that the USPTO is carrying out quality case studies and in support of this effort, encourage the USPTO to take a broad view of what "case studies" it might be possible to carry

¹⁶ Patent Examination Research Dataset, <http://www.uspto.gov/learning-and-resources/electronic-data-products/patent-examination-research-dataset-public-pair> (last accessed Feb. 12, 2016).

¹⁷ See Alan C. Marco, et al., Patent Claims Data and Implications for Patent Quality (June 16, 2015), *available at* <http://hooverip2.org/wp-content/uploads/Marco-Sarnoff-deGrazia-061615.pdf>.

¹⁸ Lists of patent characteristics that could be studied are available in the literature. See, e.g., Mann & Underweiser, *supra*.

¹⁹ One of us has already begun to conduct just such a study. If the USPTO is interested, we are available to share more details on this ongoing project.

²⁰ See, e.g., Brian J. Love & Shawn Ambwani, *Inter Partes Review: An Early Look at the Numbers*, 81 U. CHI. L. REV. DIALOGUE 93 (2014), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2512519.

²¹ Evolving Programs of the Enhanced Patent Quality Initiative, *available at* <http://www.uspto.gov/sites/default/files/documents/Evolving%20Programs%20One-Sheet%20Public%20Final.pdf> (suggesting that the USPTO plans to "develop a process for providing post-grant outcomes from sources, such as the Patent Trial and Appeal Board (PTAB), to the examiner of record and the examiners of related applications").

²² PTAB/BPAI Statistics Archive Page, <http://www.uspto.gov/patents-application-process/appealing-patent-decisions/statistics/ptabbpai-statistics-archive-page#toc-fy2015> (last accessed Feb. 12, 2016).

²³ Love & Ambwani, *supra*, at 99.

out. We believe that the three case studies described above, which include data from PTAB, other tribunals, and the EPO, will improve the agency's Patent Quality Initiative, and can also serve as effective pilots for future PTO efforts to study patent quality.

Sincerely,

Colleen V. Chien

Brian J. Love